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FINAL REPORT

Project No. 1-H-030 ~~65-1-287~~
Grant No. OEG-8-71-0023(509)

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ENGLISH PROFICIENCY AND BEHAVIORAL CHANGE IN SPANISH-SPEAKING CHILDREN

August 23, 1972

U.S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE

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National Center for Educational Research and Development
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The research reported herein was performed pursuant to a OEG-8-71-0023(509) (grant or contract) With the Office of Education, U. S. Department of Health, Education, and Welfare. Contractors undertaking such projects under Government sponsorship are encouraged to express freely their professional judgment in the conduct of the project. Points of view or opinions stated do not, therefore, necessarily represent official Office of Education position or policy.

U. S. DEPARTMENT OF

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Abstract

The purpose of the present study was to improve the English competence of Spanish-speaking students, to increase their success in school, and to help them develop stronger self-concepts. Control and experimental groups of students were selected from the kindergarten, second and fourth grades of elementary schools with a predominately Chicano population. Experimental students were exposed to various techniques designed to strengthen English as a second language (ESL). To accomplish this goal, teachers of the students in the experimental group were trained by the experimenters in techniques to facilitate the acquisition of ESL skills. The control group received no special instruction. Students in the experimental and control groups were measured on general school progress, English usage, general school behavior, and aptitude prior to and immediately following the administration of the experimental techniques.

Results indicated that there was no significant improvement of skills in either English usage or aptitude as measured by the Peabody Picture Vocabulary Test. However, the Diagnostic Test for Students of English did indicate that there was significant improvement of English usage skills for 4th graders in the experimental group. Significant gains were found in general school progress, as measured by the Stanford Early School Achievement Test and behavior as measured by the Pupil Behavior Scale for the experimental subjects. Non-significant changes were found in the control subjects.

Results are discussed in terms of possible explanations of discrepant findings and ramifications of the research project.

PREFACE

The research reported herein was supported by the United States Department of Health, Education and Welfare, Office of Education, National Center for Education Research and Development, (Regional Program).

Acknowledgement is due to the teachers and administrators of the two respective schools where the project took place; Mr. Donald Nelson, administrator Spann Elementary School, Miss Betty Wilkinson, kindergarten teacher, Spann Elementary School, Mrs. Madeline Shinovich, second grade teacher, Spann Elementary School, Mrs. Barbara Grishow and Mrs. Maureen Carroll Winstead, second grade teachers, Spann Elementary School, Mrs. Charlotte Buchanan, fourth grade teacher, Spann Elementary School, and Mrs. Patricia Wolfe, fourth grade teacher Spann Elementary School. Mr. Kenneth Ask, administrator Eastwood Elementary, Mrs. Alma Crawford, second grade teacher, Eastwood Elementary School. Mr. Clell Prewett, fourth grade teacher, Eastwood Elementary School, Miss Alma Woods, kindergarten teacher, Eastwood Elementary School. The professors from Southern Colorado State College who assisted in developing the original proposal for the project, Dr. Mildred Bebell, Dr. Clifford Bebell and Dr. Roy McCanne; the consultants, Mrs. Arlene Sutton from Southern Colorado State College, Mr. Daniel Martinez from the Pueblo Public Schools, Dr. Rick Gardner from Southern Colorado State College and Dr. Martin Burlingame from the University of New Mexico.

Further acknowledgement for the hours devoted to testing and scoring is due to the students of the Bilingual Education classes from Southern Colorado State College.

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STATEMENT OF THE PROBLEM

The project involved approximately sixty Chicano school children and their teachers. Their background and learning disabilities were identified, special materials and learning experiences were provided for them, and special training of their teachers was undertaken. The progress and achievement of both students and teachers were compared with those in the control school where comparable populations and problems exist.

In particular, the study attempted to determine whether, and to what degree, the English proficiency, school progress and behavioral change of Spanish-speaking children (for whom English is a second language) at Eastwood Elementary School was attempted by (1) introducing TESOL (Teaching English to speakers of Other Languages) materials, methods, and techniques; (2) acquainting the Eastwood staff with TESOL materials, methods, and techniques through discussions and classroom demonstrations; (3) encouraging teachers to use the methods and techniques of teaching English as a second language; and (4) acquainting teachers and students at Eastwood School with the Chicano culture.

REVIEW OF THE LITERATURE

Language is a human quality, it is peculiar only to man. Spolsky (1969) cites the fact that birds, such as the parrot, can be taught to exhibit language-like behavior through various stimuli, but yet they cannot transfer what they have learned to a new or different situation. On the other hand (with few possible exceptions), all humans do learn a language, and through internalizing what Chomsky calls the "deep structure" of language, they are able to understand and generate new sentences that they have never heard before.

Children of all cultures, with little or no formal instruction, learn the language of their culture at about the same age. Usually most children the world over, regardless of race, culture, or the language involved, have learned their native tongue to a high degree of facility by the age of four or five. The native speaker at this age has mastered constructions in his language that remain difficult for non-native students learning a new language, straight on through the most advanced classes. (Allen)

Holm (1966) states that a child has learned the structural dynamics--the pattern and operations and sentence formation and transformation--of his native language by the time he arrives at school at approximately six years of age. Holm goes on to point out the fact that the Navajo child arrives at school with a largely subconscious system of Navajo speech production habits which cause him to see the world as a Navajo. He (the child) is then faced with the "task of conflicting rules or habits." Holm maintains that one has to look no farther than

the Navajo classroom in order to see the interference of the Navajo language habits with the learning of English for the Navajo child.

In the past, to a large degree, non-English speaking students arriving in our classrooms have been expected to begin immediately at the level of language proficiency that the English-speaking child has attained over a period of six years. According to Levenson (1969) we have expected non-English speakers to keep up through "osmosis" with their English speaking peers, but in reality the non-English speaker begins failing immediately upon entering school and falls farther and farther behind with each passing year. Zintz (1960) through various testing procedures, found this to be true for the Chicano child in public schools.

Why English for speakers of other languages in this country? Bowen (1967) puts forth two justifying objectives for the student receiving English instruction in his education. First, to produce and preserve the maximum number of choices possible for each student; second, to enable the student to achieve a solid measure of inconspicuousness. He maintains that "the Chicano has one linguistic need that not all second-language students of English the world over share: he must develop a native or near native pronunciation . . ." or suffer in the choices open to him in a bicultural or dominant cultural situation.

In speaking of acquiring a second language as opposed to a first, Prator (1969) asserts that the ". . . significant difference between acquisition of one's mother tongue and adding a second language is that the former is merely learned whereas the latter must usually be taught."

Time, according to both Prator (1969) and Holm (1966), is a factor basic to second language learning. Students learning English as a second language must have a well-planned structured, sequenced, and concentrated learning experience with the English language if they are to catch up to the native speaker of English.

Bowen (1967) believes that the first task facing the teacher is to present informal English to the student, in order that he will learn what he would have learned in an English speaking home and then to move in the more formal English instruction after a foundation of basic language skills has been laid.

Those involved in teaching Chicano students must consider the cultural factors in their acquisition of a new language. Wilson (1964) contends there is no casual relationship between a particular language and particular culture; that throughout history there are many examples of cultures adopting a foreign language without significantly changing those cultures. He maintains, however, even though people can have two (or more) cultures as frames of reference and two (or more) languages to express those cultures (not needing to give up one to gain the other), that they make an intimate association between a particular culture and themselves. As a consequence, learning a new language as the expression of a new culture may be considered a threat to the survival of the association between the learner and his native culture (Lambert, 1963).

Zintz (1960) found that cross-cultural conflicts exist between cultures in environmental interpretation, values, and language concepts, and that forced acculturation causes unacceptable reactions. Christian (1965) discusses the problem of confusion and frustration which exists when a child learns one language and culture from his parents and then must learn another language and culture upon entering school. He feels that to keep from destroying the minority culture, education must involve the child's culture as he is being educated.

Witherspoon (1960) found that in general, teachers are not sensitive toward the bilingual and his culture, and that administrators need to be aware of the main cultural differences of the bilingual and the dominant culture. Fishman (1965) suggested a commission on bilingualism and biculturalism be established at the federal, state, and local levels and posed the idea of cultural pluralism as a determinant in the success of this country.

OUTLINE OF STUDY

The basic plan of the study was to match sixty Chicano students in the kindergarten, second, and fourth grades of Eastwood School (in Pueblo School District #60) with the same number of children in the same grades in Spann Elementary School (in the same district). The matching was done on a number of factors which are described and discussed below in the section, "Selection of Subject." Special learning experiences were provided to both the students and the teachers involved in the experimental work at Eastwood School. The Achievement of students was measured and the amount of progress (based on pre-testing) determined. The changes occurring in students' learnings and in teachers' activities were compared with similar information obtained from Spann School which served as the control. Whenever possible, tests of significance were used to determine the degree of confidence with which positive findings were held.

The following sections provide greater details on all the preceding points:

1. Statement of Objectives. Both general and specific objectives were identified for the project.

   General objectives include the following:

   a) To encourage expanded and improved uses of ESL (English as a Second Language) methods among teachers at Eastwood School and elsewhere.

   b) To acquaint teachers with basic methods and techniques of second language instruction.

   c) To develop and disseminate cultural awareness, and to stimulate such awareness in school planning and activities. Particularly,
      i) To assist in identifying Chicano problems in the community and developing skills needed to work effectively with the Chicanos.
      ii) To assist the participating group to learn to accept the cultural background of those they will be working with.
      iii) To establish effective relationships with the Chicano culture.
      iv) To prepare individuals for the demanding and difficult job of being catalysts for change in the school and community by recognizing their potential and limitations and those of the community they serve.

   d) And most importantly, to improve the English competence of Spanish-speaking students, to increase their success in school, and to help them develop strong self-concepts.

Among specific objectives, the following are prominent:

a) To identify learning disabilities of Chicano children.

b) To study effectiveness of special ESL methods, such as:
   i) repetition drills
   ii) dialogue drills
   iii) single and multiple slot substitution
   iv) sentence expansion
   v) minimal pair drill
   vi) top
   vii) sentence conversion
   viii) stress, pitch, intonation, juncture
   ix) fluency, accuracy, and reproduction of sounds
   x) pattern drills
   xi) single concept (rather than multiple concept) presentation

c) To organize, evaluate and illustrate the appropriate sequential presentation of materials and learning experiences in language arts in terms of 1) listening, 2) speaking, 3) reading, and 4) writing.

d) To develop and evaluate materials, techniques, and activities intended to increase cultural awareness on the part of students, teachers, and community people through procedures such as:
   i) School-community planning sessions
   ii) Use of Chicanos as resource people in the school
   iii) Experiences in interpersonal relations
   iv) Study of community problems to use in the curriculm
   v) Chicano displays and performances
   vi) Involvement of parents in classroom discussions

2. Hypotheses. Certain hypotheses (expressed in null terms) were tested using analysis of variance and analysis of covariance to determine level of confidence in the results. A 5% level was considered acceptable. The hypotheses tested include:

a) There is no significant difference between the kindergarten experimental and control groups in amount of progress in English usage.

b) There is no significant difference between the second grade experimental and control groups in amount of progress in English usage.

c) There is no significant difference between the fourth grade experimental and control groups in amount of progress in English usage.

d) There is no significant difference between kindergarten experimental and control groups in general school progress.

e) There is no significant difference between second grade experimental and control groups in general school progress.

f) There is no significant difference between fourth grade experimental and control groups in general school progress.

g) There is no significant difference between kindergarten experimental and control groups in behavioral change.

h) There is no significant difference between second grade experimental and control groups in behavioral change.

i) There is no significant difference between fourth grade experimental and control groups in behavioral change.

In addition to statistical analysis applied to data obtained in relation to the foregoing hypotheses, other comparisons were made. Since the imformation relative to these comparisons does not lend itself to formal treatment, judgments were made subjectively. However, in order to increase both the validity and the thoroughness of these judgments, guidelines were developed to aid those making judgments, and a group composed of central office staff, college personnel, and community representatives was asked to make the judgment.

Areas compared include the following:

a) Teachers' understandings and skills in ESL problems and procedures.

b) Teachers' understanding and attitudes toward the Chicano culture.

c) Teachers' attitudes toward and ways of working with Chicano children.

d) Attitudes and understandings of non-Chicano children about the Chicano culture.

e) Attitudes of their peer groups toward Chicano culture.

f) Interest of teachers not involved in the experiment toward the issues under study.

METHODS

Although much of the procedure of the study has already been stated, the entire plan is outlined in order that a comprehensive review of it can be made. The essential steps were as follows:

a) Selection of students and teachers for participation in the experimental program.

b) Determinations of students and teachers used as controls. In both these steps there was considerable activity in pretesting and in collecting information in the factors to be used in matching; these factors and the instruments and procedures used are described in some detail in the section below entitled "Selection of Subjects."

c) Work with Eastwood teachers and District #60 administrative personnel developed goals and scheduled for the program. The schedules include plans for participation of college personnel, including
   - i) participation in classroom activities
   - ii) planning between college administrators and professors
   - iii) conferences between district administrators, college personnel, and teachers
   - iv) conferences between teachers and parents of Eastwood School and college professors
   - v) meetings with Eastwood staff and community people to consider information about TESOL
   - vi) micro-teaching and follow-up

The schedules also included details regarding the activities of school personnel, including
   - i) room assignments
   - ii) time and responsibilities in testing children
   - iii) extent and nature of participation of Eastwood teachers who are not directly involved with the program
   - iv) time for demonstration classes for teachers who were involved with the program

d) Development of plans, schedules, and materials for the in-service programs with the teachers who were involved in the program. The teachers themselves had a major role in planning and working on these activities. Emphases included the following:
   - i) culture awareness
   - ii) nature and problems of Chicano children
   - iii) TESOL techniques and materials
   - iv) use of videotapes in the program
   - v) use of textbook in the program
   - vi) testing children
   - vii) evaluation of the program

e) Carrying out regular inservice education activities. Teachers involved with the experimental group were familiarized with the methods and techniques of teaching English as a second language by two college professors and a District #60 Foreign Language specialist. Teachers in the experimental group received help from professors in preparation of daily ESL plans. Class demonstrations were held for these teachers once a week using the most up-to-date materials available.

f) Post test measurements of students in both control and experimental groups.

g) Comparison of control and experimental groups in terms of i) the application of test of significance to the statistical data and ii) judgments of central office staff, college personnel, and community representative on non-statistical information.

h) Interpretation and reporting of the results.

Selection of the Subjects: Twenty Chicano students for whom English is a second language were selected from the enrollments in each of the kindergarten, second-grade, and fourth-grade levels at Eastwood. Any student whose attendance the preceding year was extremely irregular (20 or more absences, unless satisfactorily explained) were excluded. Also excluded were children whose health record or prognosis was poor. At the time of selection, the following information was also collected:

a) age
b) sex
c) years of schooling of father and mother
d) aptitude and/or I.Q.
e) readiness for kindergarten
f) achievement (for 2nd and 4th grades)
g) English usage
h) maturity of behavior

The last four of these were used as criteria by which students' growth were measured, and the hypotheses tested. They were measured both at the beginning and the end of the year of experimental treatment.

Wherever possible, instruments were selected for use in the study which are currently in use in the Pueblo public schools. This was to avoid over-testing of children. However, in some cases, tests were added to the normal procedures used in the grades under consideration. During the course of study, some new instruments were administered in addition to those described below, in order to identify diagnostic and evaluation procedures that offered particular promise for children of Spanish-speaking background.

Tests used in the study include the following:

Stanford Achievement Test (for kindergarten, 2nd, and 4th grades)

Diagnostic Test for Students of English as a Second Language
(for 4th grade)
Pupil Behavioral Scale (for all students)
Peabody Picture Vocabulary Test

The basic pattern of testing is outlined in the accompanying chart.

	K	2	4
General School Progress	Stanford Early School Achievement	Stanford	Stanford
English Usage	Peabody Picture Vocabulary	Peabody Picture Vocabulary	Diagnostic Test** for Students of English & Peabody Picture Vocabulary
Behavior	Pupil Behavior Scale	Pupil Behavior Scale	Pupil Behavior Scale
I.Q. (or aptitude)	Peabody Picture Vocabulary	Peabody Picture Vocabulary	Peabody Picture Vocabulary

* Or Linguistic Capacity Index
** Or Verbal Language Development Scale

Most of the foregoing instruments are well known and require no elaboration. However, this may not be true in the case of the Pupil Behavior Scale. The scale was initially developed by Croft and Gordon for the study of elementary school students taking Russian.[1] It was amended and further used by Croft and Ball in an investigation of the English language gains of Spanish-speaking first grade students.[2]

[1]Oakley J. Gordon. Challenging the Superior Student by Making the Study of Russian Available in an Elementary School Curriculum via Television. Final Report Grant No. 7-54-0050-024 HEW-USOE, Washington, D. C. 1963.

[2]Don B. Croft and Stanley A. Ball. Behavioral Change of Spanish-Speaking First-grade Students and Achievement in English Language. Paper read at Rocky Mountain Educational Research Association, Albuquerque, New Mexico, December, 1970.

They presented data to support their conclusion that the instrument is acceptable for use with such children. The scale provides information on the emotional maturity, leadership, and attentiveness of those on whom it is used.

The class enrollments at Eastwood School were so arranged that the children taught experimentally were in the same room at each of the three grade levels. Three volunteer teachers who were acceptable to the school administration and the project investigator served as teachers.

The records of children at Spann school were reviewed and when needed some of the tests described above were administered to them. Sixty children were chosen from these schools to serve as a control group. Those children selected were those who most closely matched the experimental group on the factors outlined above. The control children were not assigned to teachers or classrooms in any special way, nor were they singled out or identified for testing or other purposes.

SOUTHERN COLORADO STATE COLLEGE

Bilingual Education Research Project

Inservice Education Activities

1. Inservice education activities were undertaken with 11 teachers from Eastwood School--both those working with children in the experimental program and their colleagues.

2. Prof. Cordova, Prof. Sutton, and Mr. Martinez worked at the Eastwood School every Tuesday. The Tuesday schedule was as follows:

8-9 a.m	Language Culture Program--Prof. Sutton
9-9:30 a.m.	2nd grade demonstration and observation --Prof. Cordova
9-9:45 a.m.	4th grade demonstration and observation --Mr. Martinez
1-1:20 p.m.	Kindergarten demonstration and observation--Prof. Sutton

3. In the language culture program Prof. Sutton introduced the teachers to the culture of the Chicano children they were teaching.

4. In the 2nd and 4th grade demonstrations, the respective experimental teachers observed ESL activities undertaken by Prof. Cordova and Mr. Martinez. During these Tuesday sessions structured English lessons were observed, and similar lessons were prepared for the four days remaining until the next session. The experimental teachers followed through with the lessons thus prepared.

5. Similarly, the experimental kindergarten teacher observed and

planned in an afternoon session. The kindergarten class met only in the afternoon.

6. Once every two weeks experimental teachers had a special planning session designed to help them continue on their own when the project personnel were no longer available.

7. Additional activities were scheduled in the latter part of the year as project personnel and experimental teachers identified the need for them. Especially emphasized were (i) use of lessons, (ii) the testing of children, and (iii) evaluation of the program.

RESULTS

The data were analyzed with regards to evaluating the effectiveness of the experimental techniques in improving Chicano students in general school progress, English usage, school behavioral and aptitude.

Of the above four dependent variables, English usage and aptitude were both measured by the same test; the Peabody Picture Vocabulary Test (PPVT). The PPVT generates an intelligence quotient for each pupil. It was these values which were utilized in the statistical analysis. In this and all future analyses the first statistical question to be answered was whether the experimental and control subjects were equal on various relevant variables. After some deliberation it was concluded that "relevant variables" would include aptitude (as measured by an I.Q. score), father's education, mother's education, and student's age. Although this list contains only a few of many variables which have been measured, the experimenters were limited in that only the above variables could be measured from information obtained from school records or through interviews with the parents of each subject. In addition to the above data, information was also obtained on whether the child spoke Spanish fluently, whether he understood Spanish as the primary form of communication in the home.

From the onset of the experiment there was some reason to believe that the experimental and control subjects would most likely be comparable groups. The experimental subjects were drawn from a neighborhood somewhat different from those of the control subjects. Although the two schools were geographically closely located the control subjects in general came from a higher socioeconomic status neighborhood than did the experimental subjects. Quality of housing and mean income of the parents of the control subjects was noticeably higher than that of the experimental subjects. Various factors prohibited a closer matching of control and experimental subjects on these variables.

The first comparison of control and experimental subjects was conducted on aptitude as measured on the PPVT. Scores for each subject were analyzed by a two-factorial analysis of variance. The analysis of variance (ANOVA) utilized was a 2x3 (two levels of school and 3 levels of grade), independent groups and unequal cell N's. The results of this initial ANOVA are outlined in Table 1. Inspection of Table 1 shows that there was a significant difference in I.Q. scores between both schools and grades. Both differences are highly significant with no interaction being present.

A similar ANOVA on father's education is illustrated in Table 2. This analysis reveals that there existed a significant difference between level of father's education between the two schools although no difference existed between grades or in the interaction. Again the difference between schools is highly significant ($p < .0004$).

An ANOVA on mother's education is revealed in Table 3. Similar results to those obtained with father's education is seen although the difference is not as highly significant. As with father's education no

Table 1

Analysis of Variance on intelligence quotients. Analysis is a 2 x 3 factorial (school by grade), independent groups design, all Ss.

Source	df	MS	F	P
School (A)	1	2632.28	12.04	.001
Grades (B)	2	2042.37	9.34	.0003
A x B	2	100.72	.46	NS
Within	172	218.72		
Total	177	251.63		

Table 2

Analysis of Variance on father's education. Analysis is a 2 x 3 factorial (school by grade), independent groups, all Ss.

Source		df	MS	F	P
School	(A)	1	127.45	14.59	.0004
Grade	(B)	2	12.92	1.48	NS
A x B		2	1.27	.15	NS
Within		183	8.73		
Total		188	9.33		

Table 3

Analysis of Variance on mother's education. Analysis is a 2 x 3 factorial (school by grade), independent groups, all Ss.

Source		df	MS	F	P
School	(A)	1	32.60	5.50	.02
Grade	(B)	2	.96	.16	NS
A x B		2	1.13	.19	NS
Within		186	5.93		
Total		191	5.96		

difference existed between grades or in the interaction.

With regards to the data on use of English in the home, only frequency data were obtained. These values were analyzed through the use of a chi square analysis. The analysis utilized was a 2x3 contingency analysis. Analysis of the frequency with which the subjects in the various conditions were able to speak Spanish revealed a significant chi square values ($x^2 = 6.96$, $p<.05$). This would indicate that the subjects in the different grades and different schools differed significantly in the proportion of which were able to speak Spanish.

A similar analysis comparing frequency of subjects who understand Spanish when it was spoken revealed a $x^2 = 10.59$, $p<.01$. This would indicate that the subjects in the various conditions were significantly different in the proportion who have the capability of understanding Spanish when it is spoken.

An identical analysis was undertaken on the frequencies of times that English was used as the primary language spoken in the home. The chi square analysis revealed a significant difference with $x^2 = 14.87$, $p<.005$. This would indicate that a significant difference existed in the proportions of families who primarily utilized Spanish as the predominate language in the home.

It is interesting to note that the direction of these differences is remarkably consistent throughout the various analyses. Table 4 illustrated the mean percentage values for each of the above analyses. Inspection of Table 4 shows that children in the experimental group are more likely to speak and understand Spanish than those in the control group. In addition they are much more likely to come from a home in which Spanish is the predominate language used. Again, the chi square analysis shows all these values to be highly significant. Tables 5 and 6 similarly show that control subjects come from homes where the parents have a higher level of education. Again, this finding is consistent across all grade levels.

Table 7 compares mean intelligence quotients of control and experimental subjects as measured by the PPVT. Inspection of this table illustrates that the significant difference obtained in the ANOVA (Table 1) is in a direction favoring the control subjects. That is, the control subjects consistently have a higher I.Q. than do the experimental subjects at all grade levels.

Inspection of these data clearly reveals that the experimental and control subjects were not equivalent at the onset of the experiment. It was felt that one possible explanation for these large discrepancies might lie in the differential proportion of Chicano subjects attending the two schools. The control subjects come from a school district with a higher proportion of Chicano students. Since the present research is primarily aimed at Chicano students it was decided to remove all Anglo and other non-Chicano subjects from both the experimental and control conditions to determine if this would result in equivalence between the two groups.

Table 4

Mean percentage of subjects who speak Spanish in the home and who understand Spanish. Values also indicate percentage of subjects who come from homes in which Spanish is predominately used over English as the primary language spoken in the home.

	Child Speaks Spanish in home	Child Understands Spanish	Spanish used over English in home
Control-kind.	16.67	33.33	45.83
Exp. - kind	64.29	85.71	92.86
Control - 2nd	19.51	39.02	48.78
Exp. - 2nd	62.50	75.00	62.50
Control - 4th	26.79	42.86	55.36
Exp. - 4th	50.00	69.23	61.54

Table 5

Comparison of mean level of education of parents of experimental and control group subjects.

	Kindergarten		2nd Grade		4th Grade	
	Father	Mother	Father	Mother	Father	Mother
Control	9.26	9.77	10.47	9.99	10.34	10.19
Exp.	7.43	8.64	8.00	9.14	7.83	8.75

Table 6

Comparison of mean number of absences for subjects in each of the experimental and control conditions.

	Kindergarten	2nd Grade	4th Grade
Control	19.00	7.86	7.12
Experimental	13.33	6.72	5.16

Table 7

Comparison of mean intelligence quotients of control and experimental students as measured on the Peabody Vocabulary Test.

	Kindergarten	2nd Grade	4th Grade
Control	106.62	102.93	95.29
Experimental	100.77	91.60	87.32

Table 8 illustrates the results of the analysis of variance of intelligence quotients. Again, a 2x3 factorial ANOVA was conducted. Results show that even with Chicano subjects only, there still exists significant differences in the aptitude level of the experimental and control subjects. Although the difference is reduced somewhat, the difference still reaches significance at the .03 level of confidence. Differences between grade levels also remain significant. Again, the difference is reduced somewhat by analyzing Chicano subjects only but the difference is not erased. As in the previous ANOVA, no interaction is present.

Table 9 is the corresponding ANOVA on father's education for Chicano subjects only. Inspection of Table 9 reveals that a significant difference still exists between subjects in the control and experimental conditions. Interestingly enough the difference is accentuated by the removal of the non-Chicano subjects. As with the analysis comparing all subjects no differences are found across grades or in the interaction.

Table 10 reveals an identical analysis on mother's education from Chicano families only. Again, significance is obtained across schools but not across grades or in the interaction. Unlike father's education, the removal of non-Chicano subjects neither accentuated nor attentuated the differences between the experimental and control conditions.

It may be concluded then that there is little equivalence between experimental and control subjects on the variables examined, even when only the Chicano subjects are examined. Since the two conditions display such large differences at the onset of the experiment it was felt that an Analysis of Covariance would be the only appropriate statistic to compare differences obtained between performance at the beginning and end of the experiment. Analysis of covariance statistically equates the 2 groups at the beginning of the experiment such that differences obtained at the end of the experiment will then be meaningful.

A 2x3 factorial analysis of covariance on scores on the PPVT at the end of the experiment was conducted. The PPVT scores at the onset of the experiment served as the covariate in this analysis. Table 11 depicts the results of this analysis of covariance. Inspection of Table 11 shows that when score values are adjusted for initial differences between the experimental and control conditions that there is no significant difference between the experimental and control conditions on IQ scores at the end of the experiment. However, the significant difference between IQ scores across grades is still evident while the interaction remains nil. These findings would indicate that the experimental procedure utilized in the present research failed to significantly alter the IQ scores of the experimental subjects. As compared to the control subjects. This finding is illustrated in Figure 1 which displays the adjusted means of experimental and control Chicano subjects on the PPVT. Means in Figure 1 are adjusted through the covariance analysis and illustrated differences in IQ at the end of the experiment assuming there were no initial differences at the beginning. Inspection of Fig. 1 illustrates that the experimental I.Q. scores were raised somewhat at each

Table 8

Analysis of Variance on intelligence quotients. Analysis is a 2 x 3 factorial (school by grade), independent groups design, Chicano subjects only.

Source	df	MS	F	P
School (A)	1	928.31	4.71	.03
Grades (B)	2	1478.08	7.50	.001
A x B	2	222.14	1.13	NS
Within	101	196.99		
Total	107	228.54		

Table 9

Analysis of Variance on father's education. Analysis is a 2 x 3 factorial (school by grade), independent groups, Chicano Ss only.

Source	df	MS	F	P
School (A)	1	199.36	19.99	.0001
Grades (B)	2	4.63	.46	NS
A x B	2	7.11	.71	NS
Within	90	9.97		
Total	95	11.79		

Table 10

Analysis of Variance on mother's education. Analysis is a 2 x 3 factorial (school by grade), independent groups, Chicano Ss only.

Source	df	MS	F	P
School (A)	1	38.01	5.74	.02
Grades (B)	2	.23	.03	NS
A x B	2	.72	.11	NS
Within	89	6.62		
Total	94	6.69		

Table 11

Analysis of covariance on Peabody Picture Vocabulary IQ scores at the conclusion of the experiment. Data is on Chicano subjects only. PPVT scores at the onset of the experiment served as the covariate for this analysis.

Source	df	MS	F	P
School (A)	1	33.93	.35	NS
Grades (B)	2	1794.80	18.59	.01
A x B	2	7.46	.07	NS
Error	101	96.51		
Total	106	126.29		

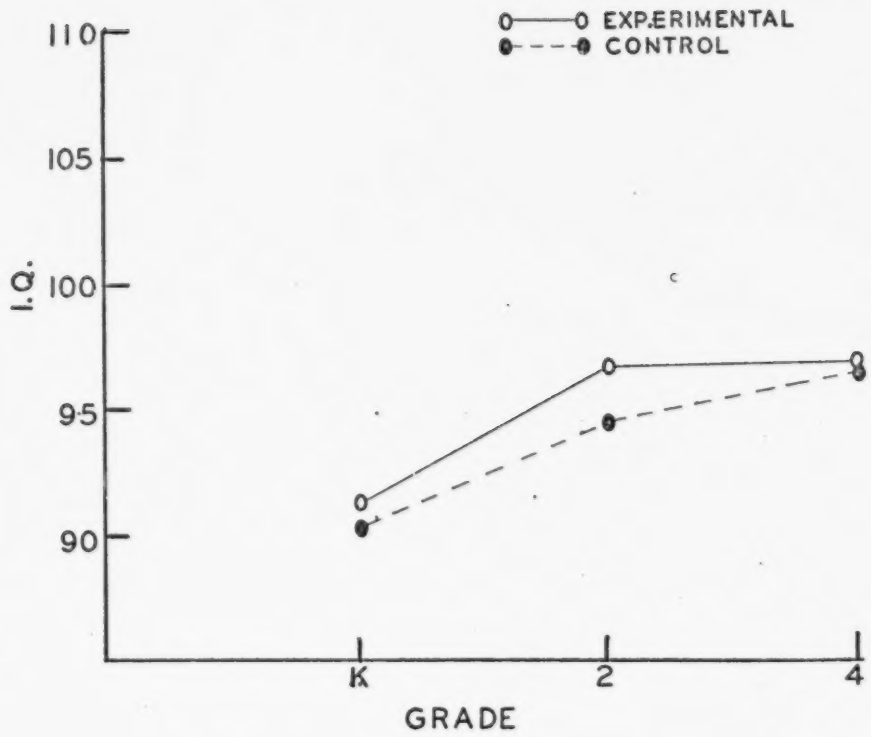

Figure 1. Adjusted means of experimental and control Chicano subjects on the Peabody Picture Vocabulary Test. Means are adjusted through covariance analysis.

grade level but the improvement did not reach statistical significance. The changes which occured during the experiment are illustrated in Fig. 2. Pre test scores in Figure 2 are those IQ scores before the onset of the experiment and post test scores are those at the end of the experiment. The significant differences between grade levels is clearly seen in Figure 2. There seems to be a general deterioration of IQ scores from kindergarten through 4th grade. It is not known whether this is a function of the school environment or a fuction of this particular IQ test. The PPVT, like other IQ test, has relatively lower reliability at the earlier grade levels and this might account for this finding. The other alternative would be that the students were being exposed to an environment (either school, home, or both) which results in a gradual deterioration of aptitude scores.

Figure 3 compares mean IQ scores for Chicano subjects only and for all subjects in the experiment. Figure 3 illustrates the earlier finding that removal of non-Chicano subjects reduces the mean differences somewhat between the experimental and control conditions but does not eliminate it.

Another test in addition to the PPVT was used to assess change in English usage at the fourth grade level. This test is called the Diagnostic Test for Students of English. The Test is not suitable for kindergarten and second grade levels and hence measurement was made only at the fourth grade. As with the PPVT, the initial analysis of this data addressed itself to the question of equivalence between the experimental and control groups at the onset of the experiment. Unlike the PPVT, however, the Diagnostic Test revealed no significant differences between the two schools at the beginning of the experiment. Therefore, it was judged that an analysis of covariance was not called for a regualar statistical analysis was undertaken on these data. Analysis of changes from the onset to the conclusion of the experiment for the control group revealed no significant differences ($t = 1.13$, NS) were obtained. This would indicate that the control subjects did not significantly change with regards to English skills through the duration of the experiment. A similar analysis for changes of the experimental subjects revealed that there was a significant change on scores on the English Diagnostic Test during the experiment ($t = 2.74$, $p < .05$). This would indicate that the experimental procedure utilized to improve English skills in the experimental group was successful in significantly raising their scores on a test measuring such skills. The pre to post experimental mean changes for the groups were as follows: Control: 98.69 to 108.45, Experimental: 96.67 to 118.95 (values are raw scores on the English Diagnostic Test). Thus, although the experimental subjects started out at a slightly lower level than the control subjects they showed a larger, and statistically significant, amount of change after the experimental procedures were applied.

Another of the dependent variables under study in the present research was general school progress. The test for this variable was the Stanford Early School Achievement Test. (SAT). Because of the nature of the SAT, different tests are administered to each grade level. Data available to the researchers for the kindergarten subjects included SAT

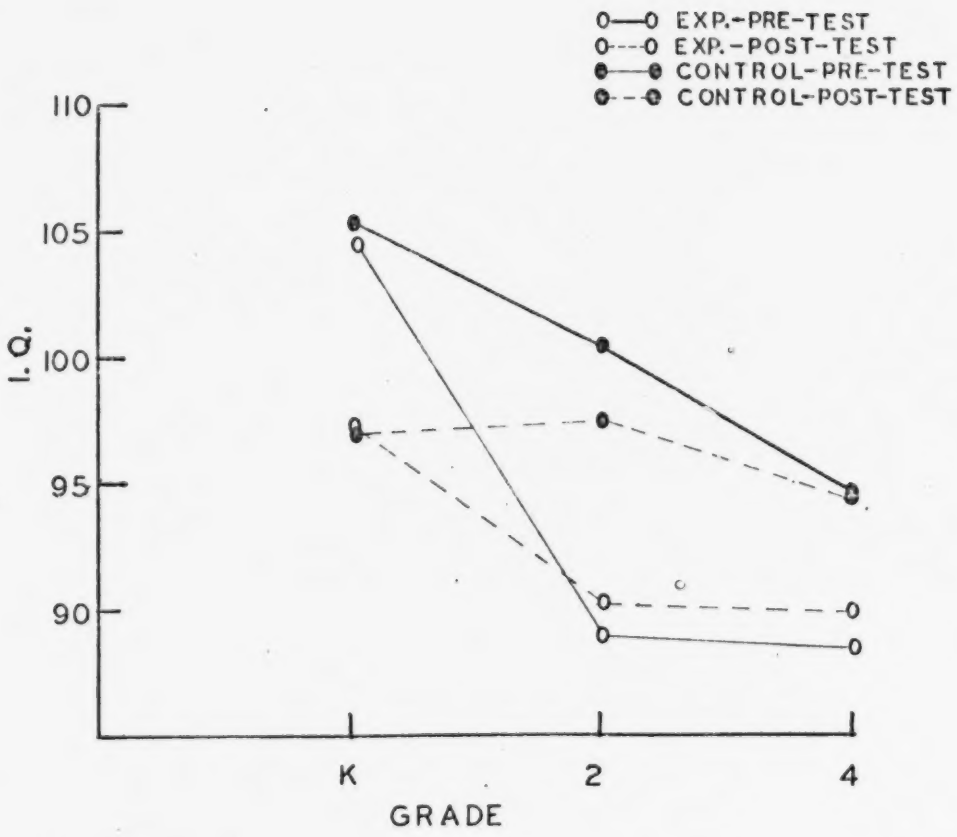

Figure 2. Mean Peabody I.Q. scores for Chicano subjects only in each of the experimental conditions. Pre and Post-experimental scores are illustrated.

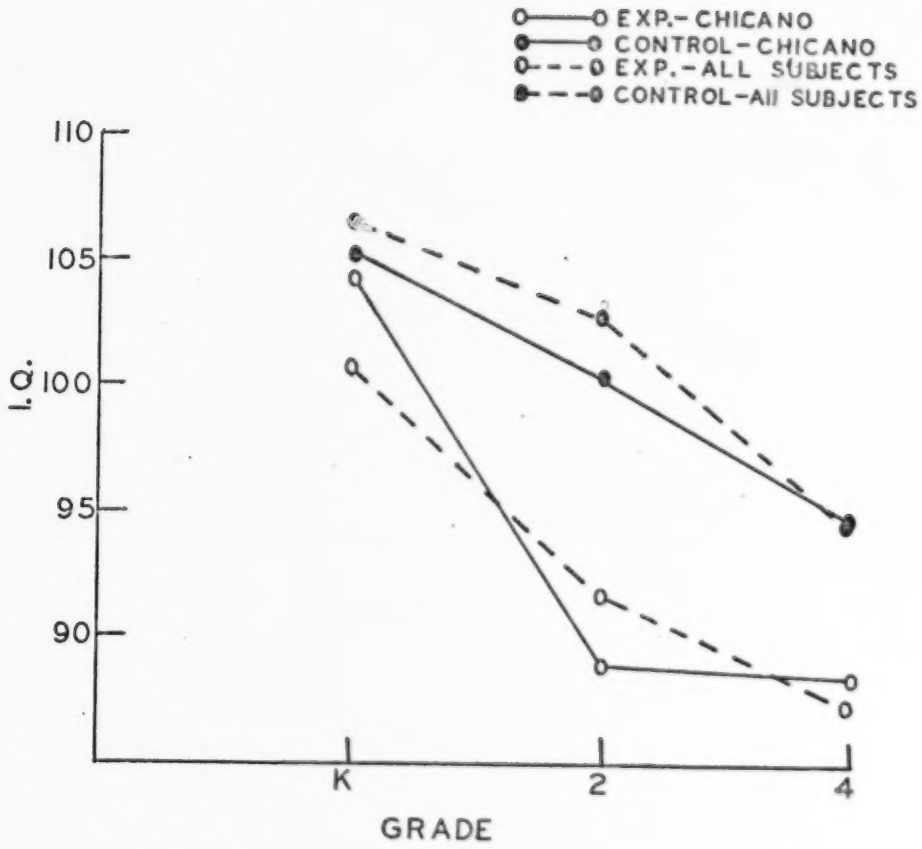

Figure 3. Comparison of mean I.Q. for Chicano subjects only and all subjects.

subtest on: 1. the environment, social studies and science, 2. mathematics, 3. letters and sounds, 4. aural comprehension and 5. total (weighted average of all 4° subtest). For second and fourth grades only a reading subtest on the SAT was available. Because of the large differences in the nature of the test administered at each grade level, it was deemed necessary to analyze each grade level separately. Again, the first step in the analysis was to determine if the experimental and control subjects were equivalent at the onset of the experiment. An analysis of pre-experimental test scores on each of the 5 subtests for the kindergarteners revealed no significant differences existed between the experimental and control test at the onset of the experiment. Most differences were very small and none approached statistical significance. Only Chicano subjects were analyzed in this and all future statistical comparisons.

A similar comparison at the second and fourth grade levels similarly revealed no significant differences existed at the onset of the experiment. Since the two groups seemed so nearly equivalent on SAT scores an analysis of covariance was deemed inappropriate. Instead ANOVA was utilized to investigate difference between pre-experimental and post-experimental scores for each of the grade levels.

Table 12 illustrates the differences between pre and post experimental treatment for each of the grade levels on each of the SAT subtest. Inspection of Table 12 illustrates that for kindergarteners in the control groups there was no significant changes during the school year on any of the five SAT subtests, excepting letters and sounds where a significant difference was obtained. It is interesting to note that the direction of the difference was in a direction such that the control subjects were performing at a significantly lower level at the end of the experiment. The experimental subjects showed no significant change on any of the five SAT subtests.

Comparison of differences at the second and fourth grade levels reveals striking differences to the results obtained at the kindergarten level. The SAT reading subtest at the second grade level reveals that the control subjects made no significant change while the experimental subjects made a tremendous increase from a mean SAT raw score of 10.00 to 19.45 resulting in an $F=49.48$, $p<.001$. Thus, there was a very large increase in performance on the Reading subtest of the SAT for the experimental subjects following the experimental procedure.

A similar result is seen at the 4th grade level where no difference is found between the control subjects but a very large difference is obtained in the experimental subjects. At the 4th grade level the experimental subjects jumped from a mean SAT score of 13.83 to 23.00 resulting in $F=23.82$, $p<.0007$. Thus, as with the 2nd graders, we see a large increase in performance on the reading subtest of the SAT for the experimental subjects following administration of experimental procedures.

The last behavior examined in the present study is general school behavior. The Pupil Behavior Scale was used in the present study for this purpose. This test consists of 26 items. Each item consists of a

Table 12

Comparison of SAT subtest scores between onset and end of experimental treatment. Scores are for Chicano subjects only. F values computed from 1-way ANOVA across pre and post experimental conditions.

	Kindergarteners	
Subtests	Control	Experimental
Environ., Social studies & Science	F=3.13, NS	F=1.07, NS
Mathematics	F=.43, NS	F=.31, NS
Letters & sounds	F=7.14, P<.03	F=3.15, NS
Aural comprehension	F=.51, NS	F=.01, NS
Total	F=3.50, NS	F=.87, NS
	2nd Grade	
	Control	Experimental
Reading	F=1.93, NS	F=49.48, p .0001
	4th Grade	
	Control	Experimental
Reading	F= .17, NS	F=23.82, p .0007

description of some behavior and the teacher gives a rating of from 1 (rarely) to 4 (frequently) for each behavior for a given child. The scale was utilized by the teachers in rating all subjects both before the onset of the experiment and immediately after. The dependent variable of interest, then, is changes in rating after the termination of the experiment.

The nature of the Pupil Behavior Scale and the rating technique used makes statistical manipulation of the data difficult. The data is at best ordinal due to lack of equal intervals in the rating scale. Thus, parametric statistics were ruled out. After some debate on this issue it was also decided that non-parametric statistics would not be appropriate either. Discussion with various teachers using the scale revealed that wide individual differences existed with regards to teacher's personal definition of the rating terms and with regards to what some of the behavior descriptions actually implied (for example, one rating is on whether the child displays "Good emotional control"). Due to this fact it was felt that any significant differences obtained statistically would have to be carefully evaluated in terms of meaningfulness. Such a large number of independent variables might be at work affecting the rating that it would be difficult to state that the experimental procedure utilized was the relevant variable. As an alternative it was decided to merely compute mean ratings and, with the above reservations in mind, attempt a meaningful comparison of the experimental and control subjects.

Table 13 illustrated the mean ratings on the Pupil Behavior Scale for each experimental and control condition. The reader should note that a higher mean rating can represent either an improvement or lack of improvement on a specific behavior depending upon the particular behavior that was rated.

The first item on the Pupil Behavior Scale addresses itself to the question of whether the child is easily distracted from working. Inspection of Table 13 shows that kindergarten and 2nd grade experimental subjects display some improvement although it is small while the control group shows a deterioration on this factor. However, more improvement is found than in the control group where both the kindergarten and 4th graders show deterioration. Both the experimental and control subjects are rated higher on the behavior regarding whether the student "is the spark for the group" although the magnitude is greater for the experimental subjects. A related question is #11 which states " able to control other children". Here again we see improvement in the experimental subjects as well as the control. The magnitude of improvement is larger for the experimental Ss at the kindergarten and second grade level and less at the 4th grade level. Within this category is behavior # 17:"initiates and organizes with others". Here the increment in this type of behavior is clearly greater for experimental Ss than control Ss. Improvement is noted at all grade levels for experimental Ss. Another related question is #20:"plays well with other children". Here we see approximately equal improvement in both control and experimental Ss. Subjects at the kindergarten and 2nd grade level in the experimental group appear to be less dominated by other children (item #24) but this

Table 13

Mean ratings on Pupil Behavior Scale for each experimental and control group.

KEY
1. Rarely
2. Sometimes
3. Often
4. Frequently

Behavior	Experimental						Control					
	Kind.		2nd		4th		Kind.		2nd		4th	
	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post
1. Easily distracted from working	2.0	1.9	2.2	1.8	1.9	2.0	2.3	2.6	2.3	2.2	2.3	2.6
2. Is the spark for the group	2.3	2.5	1.8	2.1	1.6	2.2	1.8	1.9	1.7	1.7	1.5	1.7
3. Good emotional control	2.7	2.9	2.4	2.5	2.6	2.8	2.7	2.8	2.9	2.6	2.6	2.5
4. Finds work to do on his own	3.1	3.4	2.7	3.0	2.2	2.5	2.7	2.4	2.9	2.7	2.9	2.8
5. Makes suggestions to the teacher	2.2	2.7	2.1	2.7	1.6	1.8	1.6	1.9	1.8	2.2	2.7	2.9
6. Follows directions of the teacher	3.5	3.3	3.1	3.4	2.5	2.5	2.4	2.7	2.9	2.8	3.0	2.7
7. Carries through on Projects	3.5	3.6	3.1	2.8	2.3	2.7	2.4	2.6	2.8	2.8	3.1	3.0

Table 13
(Continued)

Behavior	Experimental						Control					
	Kind.		2nd		4th		Kind.		2nd		4th	
	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post
8. Able to work alone	3.4	3.6	2.8	3.2	2.1	2.4	2.5	2.6	2.7	2.9	2.0	2.9
9. Tolerates other children's outbursts	2.4	2.8	2.1	2.5	3.0	3.0	3.0	2.8	3.1	2.6	2.7	2.6
10. Likes to be kept busy	3.3	3.5	2.8	2.9	2.5	2.6	2.4	2.4	3.1	2.7	2.8	2.8
11. Able to control other children	2.5	2.8	1.8	2.4	2.2	2.2	2.2	2.1	1.8	1.9	1.9	2.4
12. Needs emotional support from teacher	2.2	1.6	2.9	2.4	1.6	1.6	1.8	2.0	2.3	2.2	2.3	2.4
13. Throws tantrums	2.0	1.5	1.2	1.4	1.1	1.4	1.2	1.2	1.2	1.2	1.3	1.8
14. Loses temper with others	2.3	2.0	1.7	1.6	1.3	1.4	1.3	1.6	1.3	1.6	1.7	2.3
15. Adjusts to new situations	3.0	3.2	2.5	2.5	2.3	2.5	2.6	2.4	3.2	2.7	2.3	2.4

Table 13
(Continued)

Behavior	Experimental						Control					
	Kind.		2nd		4th		Kind.		2nd		4th	
	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post
16. Able to delay gratification	3.1	3.1	2.6	3.1	2.1	2.4	2.4	2.5	2.1	2.7	-	2.4
17. Initiates & organizes with others	2.5	2.8	2.2	2.5	1.9	2.3	2.4	2.1	2.0	2.2	1.8	1.9
18. Is curious	3.0	3.4	2.3	2.6	2.2	2.4	2.3	2.1	2.6	2.6	2.5	2.7
19. Plans & organizes his work	3.2	3.1	2.4	2.4	2.1	3.4	2.0	2.2	2.5	2.5	2.6	2.6
20. Plays well with other children	2.9	3.0	2.5	2.8	3.1	3.0	2.9	2.8	2.7	2.7	2.4	2.5
21. Handles responsibility well	3.6	3.4	2.5	2.8	2.5	2.5	2.1	2.5	2.6	2.7	2.7	2.3
22. Carefully thinks things through	2.9	2.9	2.3	2.6	2.3	2.5	2.0	2.4	2.5	2.5	2.2	2.0
23. Not sure of self	2.0	1.5	1.9	1.4	2.1	2.3	1.5	1.8	1.9	1.9	2.3	2.9
24. Is dominated by other children	1.7	1.6	2.1	1.6	1.3	1.8	1.4	1.7	1.7	1.5	1.6	2.0

Table 13
(Continued)

Behavior	Experimental						Control					
	Kind.		2nd		4th		Kind.		2nd		4th	
	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post
25. Is antagonistic towards others	2.2	2.0	1.6	1.6	1.0	1.5	1.4	1.8	1.6	1.7	1.9	2.1
26. Acts impulsively	2.2	1.9	1.8	1.7	1.7	1.8	2.0	2.0	1.8	1.8	1.9	2.1

finding breaks down at the 4th grade level. Nevertheless, improvement exceeds that found with the control subjects. Similar findings are found in item #25 which rates antagonism towards other children. Again the experimental Ss display improvement at the kindergarten and 2nd grade levels but not at the 4th. The control Ss, by comparison, have deteriorated at each grade level in these ratings.

One variable of interest in the present study was whether the subjects would have increased emotional control as a result of the procedures utilized. Item #3 on the scale addresses itself directly to this question. Improvement is found at all grade levels for the experimental Ss with magnitude of improvement generally higher than that of the control Ss. A related item is #12 "needs emotional support from the teacher". Here again it can be seen that the experimental Ss exceed the control Ss in ratings of this behavior. Particular improvement is seen in the earlier two grades. Item 13 and 14 are closely related to this behavior also. Frequency of tantrums appears undiminished in control and experimental subjects alike. Although experimental children apparently lose their temper with others less frequently. Control Ss, on the other hand, lose their temper with others more frequently.

Of primary interest to the investigators was whether the self-concept of the child would be strengthened through the experimental procedures. Many of the questions on the Pupil Behavior Scale address themselves indirectly to this question. Item #23--Not sure of self--reveals that kindergarteners and 2nd graders gained in self-confidence although this relationship was not found for 4th graders. However, comparison of the control subjects on this item reveals a stronger self confidence in the experimental children.

Item #4 clearly shows that the experimental Ss developed a greater capability to work on their own than did the control subjects. Similarly, they are also better able to work alone (item #8) than are the control Ss.

Experimental Ss are slightly more likely to make suggestions to the teacher (item #5). However, little improvement was noted in either group for "following directions of the teacher" (item #7). Both groups also show nearly equal improvement in ability to tolerate other children's outbursts (item #9). Some improvement was found in the item "likes to be kept busy" for the experimental Ss while none was noted for the control Ss. The experimental Ss apparently learned to better adjust to new situations (item #15) than did the control students. Both groups are able to delay gratification about equally.

Greater improvement in amount of curiosity is noted for the experimental Ss (item #18) than is found in the controls. Little improvement is found in ability to plan and organize work (item #19) in either group. The ability to handle responsibility well (item #21) is erratic across grades in both the experimental and control condition. Experimental Ss did show improvement in ability to carefully think things through, however, (item #23) while less improvement is found among the controls especially at the 2nd and 4th grade levels. Also, there seems to be a slight tendency for the experimental Ss to act less impulsively in

item #26 while the control Ss show no improvement in this behavior.

In general the findings on the Pupil Behavior Scale would seem to support the assertion that the experimental procedure utilized did meet with some success in improving emotional maturity and general desirable classroom behaviors. The most significant gains appear at the kindergarten and 2nd grade levels. Improvement generally seems greater among the experimental subjects than it does among the control although improvement is seen in both groups. The reader is again cautioned as to hasty conclusions from the data as the number of confounding variables are numerous.

CONCLUSIONS

The results of this study would seem to indicate that the procedures utilized to improve both English usage and aptitude were for the most part unsuccessful. It became very evident that the control and experimental subjects came from differing socioeconomic classes. The consistently large differences in parent's education and IQ scores clearly reflect this. In addition, the two groups were clearly differentiated in terms of Spanish speaking skills and the frequency with which Spanish was used in the home as the primary spoken language. All of these factors contribute to making the experimental and control groups heterogeneous with respect to these very important variables. It is interesting to note the wide discrepancies found in the PPVT between the two groups and yet no differences of statistical significance were found on the SAT scores or on the Diagnostic Test for Students of English. The reason for this is not clear to this investigator. It is perhaps unfortunate that the PPVT was used to assess both English usage and aptitude. Although there was some small improvement of the experimental subjects over the controls in the scores on this test the difference was far from reaching statistical significance. One finding of interest on the PPVT was the general deterioration of IQ scores from grade kindergarten through the 4th grade. The function seemed to be one of a negative acceleration. It is not known whether this deterioration is a function of the particular aptitude test used or is representative of an actual deterioration in aptitude as the child progresses through elementary school. There is previous evidence by other researchers to support the latter conclusion. There was some evidence that the rate of deterioration was at a slower rate in the experimental subjects although unfortunately not completely eliminated.

The wide discrepancies in subjects on the PPVT at the onset of the experiment forced an analysis through covariance techniques. Although this statistical design can control for numerical differences at the onset of the experiment through adjustment of the covariate the design can lead to misleading conclusions at times. Often numerous covariates are at work and in fact there is evidence for that in the present study. Winter (1971) urges "...caution in the use of covariates in factorial analyses. The model for the analysis...is a highly restrictive one. The experimenter should be aware that such designs exist, but he also should be aware of both their strengths and their weaknesses." It would be hoped that any future research along these lines would be more successful in matching subjects in the experimental and control groups. Future researchers would also be well advised to seek out separate measures of English usage and aptitude rather than combine both factors in one measurement as was done in the present study.

The discrepancy obtained between the Diagnostic Test for Students of English and the PPVT is particularly troublesome. For 4th grade students these two tests were to be a joint measure of improvement in English usage. The fact that a highly significant improvement was found with the diagnostic test while no significant improvement was found with the PPVT calls into question whether these two tests are indeed measuring the same thing. Future researchers would be well advised to use multiple

measurements for each skill in which improvement is to be determined.

Fortunately the statistical analysis revealed more favorable results with regards to general school progress. SAT scores were seen to climb dramatically for experimental subjects in the 2nd and 4th grade levels. The lack of improvement at the kindergarten level remains unexplained at the present time. However, the dramatic improvement at the other levels as compared to the control subjects would appear very encouraging. The SAT is a test that has been widely used in school systems with known reliability and validity factors. The highly significant degree of improvement in the experimental subjects would appear to justify continued studies along the lines of the present research.

Also encouraging was the results of the analysis of the data on the Pupil Behavior Scale. Although caution is needed in interpreting these types of data it appeared that improvement of the experimental subjects in the areas of self-concept, emotional maturity, and development of relationship with others showed a greater degree of improvement than that displayed by the control subjects. It was interesting to note that the greatest degree of improvement appeared at the kindergarten and second grade levels. The researchers have no explanation to account for the greater degree of improvement at these age levels than at the 4th grade level.

Although the results of the present study could not be described as spectacularly successful, nevertheless improvement was demonstrated in several areas of interest and ample justification would appear present for additional research using similar methods.

RECOMMENDATIONS

One of the difficulties encountered in the present research was the lack of suitable material for testing behaviors of Chicano children. The shortage of materials forced the use of the Peabody Picture Vocabulary Test as a measure of English usage and aptitude. The contradictory findings between this test and the Diagnostic Test would indicate that they are not equivalent in terms of measuring the same skills. What is needed are specific tests on English usage and aptitude which have been designed for Chicano students. The researchers would recommend that studies be conducted for the development of this type of material.

The results of the present research would appear to justify a follow-up study. It would be recommended that different tests or perhaps multiple types of tests be utilized in measuring English usage skills and aptitude. The lack of tests in these areas designed specifically for Chicano children forces the use of tests designed primarily for Anglo children. Careful examination of the various tests would be recommended to select those tests which are most culture fair.

It is felt by the author that a more productive approach might be accomplished through a longitudinal study starting at perhaps the 4th grade and continued through the junior high school. Although such a longitudinal study would obviously be more time consuming it would allow the experimenters to follow carefully the sequence of events occuring during this crucial period of time in the student's education.

The present research findings appear to justify certain recommendations for the educational approach for Chicano children. It appears that Chicano children's academic skills will respond positively to appropriate training procedures. This author feels that one of the primary reasons for academic deficiencies in the Chicano child is the lack of an adequate self-concept. Chicano children do not "feel good about themselves". Little, if any, emphasis is placed upon their cultural background and Chicano children are nearly always discouraged from using any Spanish language skills they might possess. The educational system attempts to treat the Chicano child and the Anglo child identically. It is the recommendation of this author that the Chicano child be identified as from a separate sub-culture with wants and needs different from those of the Anglo child. It is recommended that Chicano children be taught Spanish and English skills simultaneously while also increasing the child's awareness of and pride in his cultural background, Such a program would help to strengthen the child's self concept of himself and encourage pride in the fact that he is a Chicano. Some bilingual programs are in existence in the United States but only a few exist in Colorado, an area with a high concentration of Chicano students.

Clearly the administration of a bilingual program necessitates the use of more Chicano teachers. The number of institutions training teachers for a bilingual program are extremely few. Some bilingual programs which have been attempted in schools have failed for lack of properly trained personnel to teach in such programs. Institutions in areas of

high concentrations of Chicano students should be encouraged to develop teacher training in bilingual programs. Some institutions, such as Southern Colorado State College, have individual courses in bilingual education which could serve as a foundation for the development of a more extensive bilingual program. The need for such a program is clearly evident. Academic skills of Chicano children are consistently inferior to those of Anglo children, as was seen in the present study. The present study also demonstrates that academic skills of Chicano students be strengthened through proper training procedures. It is felt that a bilingual education program would go a long way toward strengthening the Chicano child's self concept of himself and improving his academic skills.

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